UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

14 NOV 2011

Ms. Ginger Mullins, Chief
Regulatory Branch
Huntington District
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, West Virginia 25701-2070

Re: Public Notice No. 2007-182-1-GAU; Alex Energy, Inc; Federal Surface Mine; Nicholas County, West Virginia

Dear Ms. Mullins:

The U.S. Environmental Protection Agency (EPA) has reviewed the public notice for Alex Energy, Inc's proposed Federal Surface Mine located near Drennen, Nicholas County, West Virginia. EPA's review and comments, provided herein, are based upon the Public Notice issued September 28, 2011 and supplemental documentation including an Environmental Information Document (EID), Compensatory Mitigation Plan (CMP), Adaptive Management Plan (AMP) and associated attachments and maps. Specific comments can be found in the enclosure to this letter.

EPA's review is intended to ensure that the proposed project meets the requirements of the Clean Water Act (CWA). The CWA Section 404(b)(1) Guidelines (40 C.F.R. Part 230) provide the substantive environmental criteria against which this application must be evaluated. Fundamental to the Guidelines is the premise that no discharge of dredged or fill material may be permitted if: (1) it causes or contributes, after consideration of disposal, site dilution and dispersion, to violations of any applicable state water quality standard; (2) a practicable alternative to the proposed discharge exists that would have a less adverse impact on the aquatic environment; or (3) the discharge would cause or contribute to significant degradation of the waters of the United States. See 40 C.F.R. § 230.10.

The proposed project includes the construction, operation, and reclamation of the Federal Surface Mine. The project proposes to utilize area, contour and auger/highwall mining as well as some mine through. The project involves the construction of five valley fills, six sediment ponds, and thirteen haulroad stream crossings. The proposed project would result in the total impact of 0.167 acres of wetland and 21,601 linear feet (lf) of Twomile Branch, unnamed tributaries to Twomile Branch, Peters Fork, an unnamed tributary to Peters Fork, unnamed tributaries to Little Elk Creek, Line Creek and unnamed tributaries to Line Creek. The construction of the five proposed valley fills would permanently impact 16,975 lf of ephemeral and intermittent stream (as classified in the JD). The mining and backfilling would permanently

impact 931 lf of ephemeral and intermittent stream (as classified in the JD). The construction of the proposed six sediment ponds and thirteen haul road crossings would temporarily impact 3,695 lf of ephemeral and intermittent stream channel (as classified in the JD). The applicant, as described in the Public Notice, proposes to re-establish 3,695 lf of stream temporarily impacted, restore 15,525 lf of the Right Fork of Line Creek watershed, preserve 18,052 of stream in the Right Fork of Line Creek watershed, establish 0.34 acres of emergent wetland in the Right Fork of Line Creek watershed, and establish 14,155 lf of stream downslope of National Pollutant Discharge Elimination System (NPDES) outlets.

The project is located in the Headwaters of Twentymile Creek, Outlet Peters Creek, and Outlet Rich Creek-Gauley River sub-watersheds (HUC 12) which are within the Gauley River sub-basin (HUC 8). Current mining activities are underway within each sub-watershed, including the permittee's adjacent operation, PGM Surface Mine (S301405). Within the Headwaters Twentymile Creek sub-watershed, Robinson Creek is listed on the CWA Section 303(d) list as biologically impaired caused by mining; both Robinson Creek and Hardaway Branch have an approved total maximum daily load (TMDL) for iron. Within the Outlet Peters Creek sub-watershed, the Right Fork Line Creek has an approved TMDL for iron and Line Creek has an approved TMDL for fecal coliform. Within the Outlet Rich Creek-Gauley River sub-watershed, Rich Creek has an approved TMDL for iron and fecal coliform.

Based on the information available to EPA it appears that portions of Peters Fork, Line Creek, Twomile Branch, Twentymile Creek and Otter Creek will be mined through. In addition, the applicant has proposed five valley fills in these watersheds. Twomile Branch is the proposed location of Valley Fill 2 and some mine through areas. Data for Twomile Branch provided in the EID from April 2006 and 2007 show West Virginia Stream Condition Index (WVSCI) scores of 89-90 and conductivity levels of 51-57 µS/cm. An unnamed tributary (UT) of Little Elk Creek is the proposed location of Valley Fill 3. Tthe data for this stream provided in the CMP indicate conductivity levels ranging between 30- 112 µS/cm in the spring seasons of 2007-2011 and WVSCI scores ranging between 77-88. Line Creek is the proposed location of Valley Fills 4 and 5. Based on the data provided in the EID the conductivity near the mouth of the Left Fork of Line Creek was measured at 71 µS/cm. Peters Fork is the proposed location of Valley Fill 1 and some mine through areas.

Based on West Virginia Department of Environmental Protection (WVDEP) data, Peters Fork has low conductivity (30 µS/cm) and good WVSCI scores (75 – 88). Data from the EID show that average conductivity in this stream was 190 µS/cm near the mouth from November 2005 to July 2006. Peters Fork drains into Hardway Branch. Hardway Branch was sampled at the mouth in August 2003 and had a conductivity of 215 µS/cm, however, when WVDEP sampled Hardway Branch again in April 2006 the stream had a conductivity value measured at 873 µS/cm. Upstream of the confluence with Peters Fork, Hardway Branch had a conductivity of value of 1,238 µS/cm in April 2006 indicating dilution of high TDS in Hardaway Branch by the lower conductivity water in Peters. In May 2010 Hardaway Branch downstream of the confluence with Peters Fork conductivity was measured at 1,430 µS/cm. Aerial imagery shows that the valley fill in Hardway Branch was constructed between 2003 and 2007. This trend of increasing conductivity levels in Hardway Branch following the construction of the valley fill in

its headwaters is striking. This trend underscores EPA's concerns described in the enclosure regarding potential impacts to this watershed when considering the best available peer-reviewed scientific information documenting the relationship between surface coal mining activities, elevated levels of specific conductance (conductivity), and impacts to water quality and aquatic biology. For this reason, EPA is concerned that filling Peters Fork would remove a source of dilution from Hardway Branch.

Our review of the submitted information identified substantial deficiencies and lack of necessary information needed for the review of this project. The remainder of this letter describes generally EPA's concerns. The enclosure describes EPA's review in greater detail and provides more specific comments and questions.

The applicant's stated project purpose is to extract coal reserves from five coal seams. The CWA Section 404(b)(1) Guidelines state that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." *See* 40 C.F.R. 230.10(a). The alternatives analysis included in the EID submitted by the applicant analyzes several extraction methods, including underground and surface mining methods. The applicant also evaluated on-site and off-site spoil disposal locations. Based on the information provided, it is not clear that the applicant's proposed alternative represents the least environmentally practicable alternative. EPA recommends that the applicant continue to incorporate additional avoidance and minimization efforts where possible. Specifically, valley fill construction techniques or available best management practices in addition to the proposed "bottom-up" construction method designed to protect downstream water quality and prevent significant degradation of the aquatic ecosystem should be evaluated and, where appropriate, included.

Discharges of dredged or fill material may not be permitted if such discharges will cause and contribute to significant degradation of the waters of the United States. See 40 C.F.R. 230.10(c). Nor may such discharges be permitted if they cause or contribute, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standards. See 40 C.F.R. § 230.10(b). The applicant has provided an adaptive management plan for agency review. Additional comments and questions regarding the alternatives analysis and adaptive management plan are enclosed.

The fundamental objective of compensatory mitigation is to offset unavoidable impacts to waters of the United States authorized by the permit. See 40 C.F.R. 230.93(a). The applicant submitted a CMP that proposes to re-establish, preserve and establish stream channels. The established stream may have limited ability to self-regulate and maintain equilibrium of its biogeochemical processes such as aquatic productivity, hydrology, water quality, and sediment transport. Furthermore, given the current conditions of the proposed preservation areas, it is unclear how this preservation will benefit the watershed and whether it meets the criteria provided in the 2008 Mitigation Rule. It is also unclear based on the information provided whether the proposed restoration work on the Right Fork of Line Creek is in fact necessary given the current conditions in that waterbody.

The receiving streams are some of the last remaining good quality streams, with good water quality and habitat for aquatic life within a severely impacted watershed. The receiving streams are also providing clean freshwater dilution to the downstream system. Accordingly, EPA is concerned that the mitigation as proposed may not provide meaningful ecological functional replacement of the streams proposed to be impacted. Therefore, we are concerned that the new stream channels proposed in the CMP will not likely offset the permanent impacts. Based on the information provided, it does not appear that physical, biological, and chemical observable and measurable success criteria are being proposed. Such measurable success criteria and a clear timeframe for achieving success criteria are important components to ensure that the CMP provides appropriate compensatory mitigation. Additional comments on the CMP can be found in the enclosure provided.

EPA is concerned that this project will likely cause or contribute to significant degradation to a watershed that has already been significantly impacted by the cumulative effects of past and current surface mining operations. The proposed operation is located in the Headwaters Twentymile Creek sub-watershed (HUC-12). The larger Twentymile Creek watershed (HUC 10) is a well studied watershed. Significant monitoring and data analysis were done in support of the Programmatic Environmental Impact Statement for Mountaintop Mining/Valley Fills (PEIS). Additional monitoring efforts have continued since the Final PEIS. Mining has occurred in the watershed for over 50 years. Such mining includes many large surface mine operations and mining of many coal seams pre- and post Surface Mining Control and Reclamation Act implementation which has resulted in impacts to approximately 26 percent of the surface area of the HUC-10 watershed. As a result of these surface operations, we see trends of significant effects to water quality including elevated levels of specific conductance, sulfates, and total dissolved solids leading to documented significant degradation of the aquatic ecosystem of Twentymile Creek. EPA monitoring data indicates that the Twentymile Creek mainstem routinely measures greater than 2000 µS/cm even though historical data (i.e., baseline Bethlehem Mine Company from 1977) indicate conductivity levels closer to between 48–77 µS/cm in the mainstem of Twentymile Creek just downstream of the confluence with Lilly Branch. At the smaller sub-watershed level (HUC-12) if all the projects proposed in this Headwaters Twentymile Creek sub-watershed were constructed the watershed will be over 50 percent mined. In addition, the surface area of Outlet Peters Creek sub-watershed would be approximately 19 percent mined and the Outlet Rich Creek-Gauley River sub-watershed would be approximately 14 percent mined.

Given the past, present, and proposed future mining activities within the impacted sub-watersheds, EPA continues to recommend that the Corps conduct a thorough cumulative effects analysis pursuant to 40 C.F.R. Sections 230.1 (c), 230.11(g) and 230.12, which includes a detailed presentation of past, present, and reasonably foreseeable activities. We suggest an approach that would manage and link proposed projects to overall water quality and habitat improvement on a subwatershed and sub-basin basis.

Consistent with Executive Order 12898 entitled "Federal Actions to Address Environmental Justice In Minority Populations and Low-Income Populations," the accompanying Presidential Memorandum, and the August 4, 2011 Interagency Memorandum of Understanding on Environmental Justice and Executive Order 12898, EPA recommends that the

Corps analyze the potential for disproportionately high and adverse effects on low-income or minority populations in the area of the Federal Surface Mine, as well as ensuring the meaningful engagement of affected communities. Analyses should consider impacts to the affected community including potential impacts to drinking water supplies, subsistence fishing, and effects of blasting, truck traffic, noise and fugitive dust. The information provided to EPA does not include any evaluation of environmental justice concerns. Additional comments on environmental justice are enclosed.

EPA believes that the project as currently proposed may not comply with the Section 404(b)(1) Guidelines individually or cumulatively, that the project will likely adversely affect the water quality and result in significant degradation to the aquatic ecosystem. In light of all the information available to EPA regarding the Twentymile Creek watershed, we are concerned regarding the available assimilative capacity remaining in the watershed, and especially the sub-watershed, to absorb additional effects likely to be associated with this project. Significant modifications to the proposed project and the permit application to address this lack of assimilative capacity should be considered. In light of these concerns, EPA believes that the project may result in substantial and unacceptable impacts to aquatic resources of national importance, as covered in Part IV, paragraph 3(a), of the 1992 Clean Water Act Section 404(q) Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army. In addition, we believe it may be appropriate for the Corps to consider whether it would be appropriate to prepare an Environmental Impact Statement (EIS). As you make your determination whether to prepare an EIS, we recommend that you consider the large scale of the proposed project's impacts, e.g., the loss of nearly four miles of stream habitat and the construction of a 5 valley fills in what appears to be good quality streams within a severely degraded watershed that may not be able to endure further insults. In addition, it is not clear that the mitigation proposal, as currently drafted, would serve as a basis for supporting a Finding of No Significant Impact.

Thank you for providing EPA the opportunity to review and provide comment on the Public Notice for the Federal Surface Mine. If you have questions, please do not hesitate to contact Ms. Alaina DeGeorgio, the staff contact for this project, at 215-814-2741.

Sincerely,

John R. Pomponio, Director
Environmental Assessment & Innovation Division

Enclosure

Enclosure
Detailed Technical Comments- Federal Surface Mine, Nicholas County, WV

Environmental Information Document

General Comments

- The EID should include a cover which provides the document title, date of latest revisions, and a table of contents.
- The rows in Table 37 appear to be transposed, please verify the table information.
- The sample locations Pm-248, 249, and 250 appear on the map, but do not appear on the water quality table. Please verify this information.
- The EID references several drawings that have not been provided. Please provide full-sized or electronic copies of all drawings referenced in the document, including B06-170-A3, B06-170-A4, B06-170-E2, B05-235-E4.
- In the document received by EPA for review Tables 18, 32 and 33 are not legible. Please provide clear copies.
- The EID references several appendices, for example appendix A on page 61, appendix H on page 60, and Appendix J on page 129. At this time, EPA has not received any appendices within the documentation provided. Please provide all appendices that are referenced in the document.

Purpose and Need

- The project's proposed purpose is the recovery of the 5-Block, Stockton, Coalburg, Winifrede, and Clarion coal seams, as stated on page 4 of the EID. Page 13 includes a table indicating whether coal seams met the general minimum criteria for underground mining. This table includes the following coal seams: Middle Kittanning, 5-Block, Coalburg and Winifrede. It is not clear why the applicant considered a different set of coal seams in their alternatives analysis than are present in their purpose and need. The Stockton and Clarion seams do not appear to have been included in the alternatives analysis. The Middle Kittanning coal seam was not included in the purpose and need. In the table for the applicant's preferred alternative found on page 16, only two of the four evaluated seams met all of the minimum criteria. Page 24 of the EID describes the applicant's mine plan. It states that the applicant will mine various splits of the Winifrede, Coalburg, Stockton, Stockton A, Clarion, 5-Block and Kittanning seams. Also, the Winifrede and the Coalburg seams appear to be the only seams mentioned in the applicant's description of mine phases. Please clarify if the other seams will be mined. If only the Coalburg and Winifrede will be mined, the project purpose and need should be adjusted to reflect this. The applicant's alternatives analysis should be revised to reflect the proper coal seams being proposed to be mined for this project.

Alternatives Analysis and Avoidance and Minimization

- It is unclear in all the documentation provided for review how much coal will be extracted for the proposed preferred alternative. Based on information received during prior submittals, it appears that 2.1 million tons of coal will be extracted. Please clarify this information. The amount of total spoil and amount of spoil to be placed in each valley fill also needs clarification. Amount of coal recoverable and spoil generated should be given for each alternative.
- Page 10 of the EID discusses criteria that the applicant considered practicable. "An alternative will be considered practicable with regard to technology if it compatible with the existing equipment and technology and does not require a major expenditure of capital for new equipment and technology." Please clarify what would be considered a major expenditure. Discuss what existing equipment and technology is available to the applicant.
- On Page 10 of the EID the applicant discusses the overburden to coal ratio- however, no overburden to coal ratio is given in this section of the document. However, on pages 13 and 14 a cumulative ratio of 16:1 is provided for the mountaintop removal method and multiple seam contour methods that were analyzed, however, no other ratios of the range of mining method alternatives were provided. Is this the ratio that is being applied to the proposed alternative? Please include a discussion on what is considered an acceptable ratio and the rationale supporting it and how it applies to this project under the current economic conditions and any other appropriate considerations. Given the confusion of the coal seams being mined (comment provided above), please provide a discussion regarding which seams are available or unavailable to the applicant at proposed Federal Surface Mine, and the mine the mine is designed in the proposed configuration
- Page 12 discusses the general minimum criteria for an area to be considered for underground extraction. Adequate roof and floor structure is included but it is not clear what is needed to operate safely and effectively. Please include additional detail for what is needed in order to underground mine. If there is existing pre-law or ongoing underground mining at the site, a history and any limitations resulting from this should be given. Based on the information provided in the alternatives analysis, it cannot be determined if underground mining is a viable alternative.
  Another criterion for underground mining was given- greater than 2.0 clean tons per foot (ctpf). The paragraph states that "For the type of coal quality expected to be encountered at the Federal Surface Mine reserve this is the minimum ctpf that is practicable." A discussion and description of each of the coal seams proposed to be mined has not been provided, it should include the coal quality. It is not clear why 2.0 ctpf is the minimum.
- On page 52 the applicant states that within the project area, portions of the Winifrede seam is currently being deep mined. This seam is included in the applicant's purpose and need. More information about this operation is needed. Is this deep mine being operated by the applicant?
- Discuss how much coal is being sterilized for each alternative considered. The analysis currently only states whether or not any reserves would be sterilized by each alternative. The alternatives analysis should also include information on how much coal can be recovered by each mining method and alternative. The analysis should also consider

combining different mining methods with one another. It is unclear whether a combination of methods would result in a viable alternative.

  - Page 26 states that the applicant will "achieve the highest possible rate of recovery thereby minimizing the possibility of future mining in the area". What is the rate being referred to? Are there other coal seams that could be mined at this location?

- Page 21 states that "due to lack of off-site disposal areas, topography of the permitted area and haulage distance restraints is has been determined that at least two valley fills will need to active in order to effectively mine the area." There is insufficient information as to why at least two valley fills are needed at a time. Please support this statement.
  - Phase II of the applicant proposed plan requires that four fills be open at one time in order to maintain the applicant's targeted productivity levels on a consistent basis. What is the applicant's targeted productivity level? Support why this level is necessary.
  - The table on page 22 does not appear to correspond to figure 05235M5R. Please verify information displayed on the map and table.
  - Consideration should be given to sequencing of fills, where sequencing means valley fills associated with a project should generally be constructed one at a time; and the permittee should demonstrate to the satisfaction of the permitting authority that water quality has been protected and that significant degradation has not occurred as a result of each valley fill before the permittee may begin construction of subsequent valley fills. If the applicant requires at least two valley fills to be active at a time, then consideration should be given to sequencing the valley fills in pairs.
- Page 155 states that the company has been granted the right to mine the property by surface mining methods. Does their agreement limit the applicant to only utilize surface mining methods?
- Please describe how the construction of proposed valley fills at the Federal Surface Mine will differ from the valley fills constructed on the applicant's adjacent mines and how the actions taken at the proposed Federal Surface Mine will minimize likely impacts to water quality or causing or contributing to significant degradation. The applicant lists factors that were considered in the analysis of off-site placement of material on page 17. The applicant states that the haulage length of greater than 3500ft one way travel would result in unacceptable transportation costs. It is not clear why this distance is being used. Opportunities for off-site placement beyond 3500ft should also be evaluated. Provide information on mines that may be located beyond this radius.
- More detailed information or rationale supporting the factors considered for off-site placement of material is needed.
- Please include a map showing adjacent mines mentioned on page 17 that fall within the appropriate radius from the proposed Federal Surface Mine. Also include capacity and ownership of each adjacent mine. It is not clear if adjacent mines have capacity or not.
- Pages 18-23 include brief discussions of 22 possible valley fill locations within one mile, as shown on figure B06-170-C2. Page 18 states that these locations were analyzed for slope stability, fill capacity, drainage control and operational factors. Additional detail is

necessary for these criteria, for example what specific fill capacity is necessary? In the descriptions of each location, however, other factors were given that were not included in the analysis criteria. Some locations also included proximity to existing homes or utility lines, amount of watershed disturbance, avoiding minimized impacts from another surface mine, amount of stream impact, distance from the operation, haulage distance, and structures in the valley. These additional factors were not applied uniformly to each location. It is not apparent that the 5 proposed valley fill locations are only practicable locations available to the applicant.

  - Discuss the amount of potential stream impact for each possible site location.
  - Discuss the potential to combine potential fill locations with adjacent site locations, for example site 8 and 22 are adjacent. Would combining 2 smaller fills into one, allow for other fills to be eliminated?
  - Several of the site locations were eliminated because the slope of the valley floor where the toe of fill would be located is over 20%. The applicant states that constructing a valley fill toe on a slope over 20% requires additional engineering designs. Although these locations may require additional engineering designs, it is unclear why these additional designs cannot be completed, or if it is possible to move the toe of the fills in these locations.
  - Assuming that certain fills are practicable locations for the disposal of excess spoil, a discussion needs to be provided about minimization of aquatic impacts within each fill location.

- The applicant provides a discussion of best management practices (BMPs) to be used in valley fill construction on pages 22-23 of the EID. Many of these points appear to be related to underdrain construction. A more detailed discussion of best available technologies, BMPs and construction techniques available to the applicant in the construction and operation of the Federal Surface Mine should be included.
- Page 29 states that the valley fills toes into waters of the U.S. are limited because the operation is located near the crests and ridgelines. While this statement may well prove correct, it is unsupported in the EID because it is not compared to impacts from other design alternatives. How much impact was avoided by doing this? Does the applicant have alternatives designs to compare the proposed action to?
- Five core holes were taken in the permit area to be used in the generation of a materials handling plan. It is not clear that 5 borings over the 746 acres in the permit area can provide enough data to accurately identify locations that are likely to include selenium or high TDS/TSS containing strata..
  - The materials handling plan states that identified materials exhibiting toxic characteristics will be isolated or blended in areas away from valley fills. Please provide more detailed information about how materials will be isolated or blended and where they will be placed.
  - The materials handling plan should include provisions for selenium or for high TDS/TSS containing strata. The current plan seems to focus on acidic strata.
  - Page 116 references 8 coreholes, however, earlier in the document it is stated that there were 5 coreholes. Please clarify.
- The applicant proposes six sediment ponds as part of the project. It is not clear if any opportunities exist to place these ponds off-line in an upland location.

- On page 61, the applicant states that "reasonable efforts have been made to assess and mitigate for these impacts." The CWA 404 (b)(1) Guidelines require avoidance and minimization of impacts then if impacts cannot be avoided impacts can be mitigated. While an assessment of impacts and a compensatory mitigation plan has been provided, a true demonstration that impacts have been avoided and minimized and that significant degradation will not occur is necessary. It is unclear how many linear feet of stream have been avoided.

Specific Comments

- The project description includes mining, sediment ponds, surface water diversions, power lines, maintenance facilities, offices, and warehouses necessary to service the operation. Please describe any aquatic impacts associated with these support facilities.
- Page 8 states that new infrastructure (roads and power) can benefit future developments in areas where economic development is encouraged. The post mining land use for this project is fish and wildlife habitat and recreation lands. Please clarify if roads and power will be left in place after the conclusion of the project and if any development is planned for this area.
    - Page 46 states that the applicant is proposing to reclaim 690.99 acres that would be restored for fish and wildlife habitat and recreation lands. The proposed project covers 746 acres. What is the proposed post-mining land use of the remaining acres? Why aren't all lands being converted back to the same land use?
    - The applicant expects that the reclaimed land will support an increase in the wildlife population at the end of reclamation. It is not clear why this increase is expected. It is also unclear whether the "wildlife" to which the applicant refers is the indigenous wildlife currently occupying the site, whether the applicant expects the indigenous population to return or whether indigenous wildlife would be replaced by other species better suited to the topography and vegetation most likely to exist post-mining.
- Revegetation plan- the applicant should consider the use of native, non-invasive species for replanting. What will be used as topsoil substitute?
- Please provide a copy of the applicant's NPDES permit. How many outlets are included in this permit? The applicant seems to rely on the NPDES permit to support the position that impacts have been reduced.
- The applicant proposes to impact two wetlands as part of their proposed project. More information is needed about these wetlands, including location, size, wetland type, functions and values. Please provide a map of these areas.
- Stream crossings have been designed to pass a one year, 24-hour storm event, all higher flows are expected to overtop the crossing. Provide a map that clearly shows the locations of the proposed stream crossings. Is the applicant taking any steps to prevent the loss of these crossing structures during a high storm event?
- The applicant has identified two WVDNR listed high quality streams near the project area, Peters Creek and Twentymile Creek. Although these streams are not directly impacted by the proposed action, impacts in the headwaters are likely to have indirect

impacts downstream. What is being done to protect or maintain the integrity of these downstream high quality resources?

- Do either of these streams or any of the impact streams have natural trout populations?
- The proposed project area may be habitat for some rare, threatened or endangered species, including the Indiana bat and the Virginia Big Eared bat. EPA recommends that additional coordination be conducted with USFWS to ensure that no adverse effects to these species occur. Mist net surveys conducted in 2007 are almost five years old. Page 37 references Appendix C of the EID. At this time, EPA has not received any appendices.
- The GAP analysis provided is far outdated since it reports that percent mined land in the Twentymile Creek watershed is only 3.93%. This analysis appears based on outdated aerial imagery; the EID states that the product was the best available in 2002, which means the aerial imagery was flown prior to that (GAP estimates are based 1992 coverage). Based on the 2001 National Land Cover Dataset, Twentymile Creek was 13% mined. Our most up-to-date GIS analysis based on the WVDEP mining permit boundary dataset and the watershed boundary dataset for the 12-digit hydrologic unit show that approximately 50% of the surface area of the HUC-12 watershed is permitted for surface mining activities. The surface area of the entire Twentymile Creek watershed (HUC-10) is approximately 26% permitted.
- As seen on page 40, the streams were delineated for this project in June and July 2006. EPA understands that there is an approved jurisdictional delineation dated June 26, 2008. Although the delineation is approved, EPA is concerned that some of the streams proposed to be impacted may have been mischaracterized. The proposed valley fills have drainages ranging from 49-233 acres. Based on a USGS study (Paybins et al), perennial flow in this area of West Virginia has been documented in drainages as small as 40 acres (based on the median value found by USGS); the EID claims no perennial streams will be impacted by the proposed project.
- Please provide adjacent mine water chemistry and macroinvertebrate data.
- EPA recommends that a cumulative effects analysis be conducted for each subwatershed that the project is located in. Existing impacts vary from watershed to watershed; examining cumulative effects at the Gauley River sub-basin level may not provide the appropriate level of detail.
- Page 118 discusses a hydrologic reclamation plan that has identified short term and long-term modifications to the hydrologic balance. It continues to discuss mitigating measures for these changes, but it does not state what the short or long term modifications will be.
- Page 97 states that the applicant "may have future plans for additional operations in the area". Please clarify what future plans they may have and what their nearby holdings are.
- Page 38 states that "no valuable natural aquatic sites were found within the proposed project area". Page 39 states that "there are no known fish and wildlife areas within the project area." Please clarify what the applicant means by 'valuable' and 'remote' wildlife areas.

Environmental Justice (EJ)

- Page 11 states that the project is located "in an already economically poor area".

- Page 39 states that there are no public water intakes within 5 miles of the project area. This statement implies that many of the nearby residences receive their water supply from a well or directly from nearby streams. How many residences that have private water supplies are located in the same drainages as proposed fills? Environmental justice analysis should consider impacts to private water supplies.
    - Specifically, according to the 2000 U.S. Census, there are 25 households located in the block group which contains the Federal Surface Mine that do not have plumbing. This suggests these residents rely on nearby streams for sources of drinking water. Special consideration must be given to the affects the Federal Surface Mine will have on these populations.
- Page 49 states that the operational activities should not be visible from most residential areas. How many residences will the operation be visible from? How many people will be able to see the operation from adjacent highways? Evaluate how many residences will be able to hear or otherwise be impacted by the operation, especially during blasting.
- It is not clear if EJ populations have been identified and if impacts to these populations exist. Without a thorough analysis it should not be assumed that impacts do not exist.
    - Specifically, a characterization of the economic status of residents near the site and the conditions they face including any effects relating to the proximity of the blasting zone, locations of discharges of fill material, truck traffic, noise, fugitive dust, and habitat loss needs to be conducted. Additional consideration must also be given to these activities' potential impacts on subsistence fishing, hunting, foraging and gardening in the area.
    - It is important that consideration be given as to whether these impacts will range over a broad area or will be concentrated in particular areas. Detailed maps outlining the residential areas in relation to these activities may help in conducting this evaluation. It is also important that the effects be considered both independently and cumulatively. Considering the effects cumulatively provides the most realistic "snapshot" of what the community will be facing when the project reaches fruition. Having this information readily available will help engage the affected communities during public outreach and ensure that they can be meaningfully involved.
- Please use the most recent census data available. Information is provided at the county and state level. Specific characteristics of the block group(s) where the project is located should be given
    - According to the 2000 Census (detailed demographic data from the 2010 Census is not yet available) the percent of people living in poverty in that block groups is 29.29%. This far exceeds the West Virginia state average of 17.8%. Moreover, the median family income is $26,750, which is over $11,000 less than the West Virginia state average ($37,423) and almost half the national average ($52,029). Accordingly, additional analysis of the potential for disproportionately high and adverse effects on these low-income populations needs to be conducted.
- Page 157 notes that there are 26 residences located within the secondary 0.5 mile blasting zone radius. What is the expected amount of vibration at these residences? How frequently will blasting occur at the project site?

- Page 158 describes measures to limit or control fugitive dust if warranted. How much dust is expected to be generated, how will it be determined at what point measures will be employed?

Compensatory Mitigation Plan (CMP)

- The applicant proposes to offset impacts through on-site and off-site mitigation. For on-site mitigation, they propose to establish stream channels below on-site NPDES outlets. These created stream channels are unlikely to offset the permanent and temporary losses of headwater streams within these watersheds. The 2008 Compensatory Mitigation Rule notes that streams are difficult to replace, does not encourage stream establishment and re-establishment. The CMP states that the sites were chosen because water quality was non-limiting to benthic macroinvertebrate health, but it does not appear that the analysis accounted for the fact that valley fills will be constructed upstream or how the construction of valley fills upstream will affect water quality. Based on the information provided, it would appear likely that water quality will be affected by the valley fills and may become limiting to benthic macroinvertebrate health after the valley fills have been constructed. In addition, the steepness of the new channels could result in erosion and subsequent sediment problems downstream.
- Three of the downstream mitigation sites for which enhancements are proposed have WVSCI scores in the 80s, and more than half of the downstream mitigation sites do not have impaired WVSCI scores. Accordingly, some or all of the downstream mitigation sites may not be suitable candidates for enhancement and enhancement may be unnecessary at those sites. Mitigation resources should be focused toward higher priority sites that require improvements to physical habitat. It will be far more beneficial for the applicant to seek out stream channels in poor physical and biological condition than to attempt to show demonstrable ecological lift in reaches that are already in relatively decent shape.
- RBP habitat scores for enhancement channels seem lower (19 reaches had RBP less than 100, one reach was 63) than the actual physical habitat conditions appear to merit. For example, site B-1 scored 105, with marginal embededdness and sediment deposition scores and a poor channel flow status score. The accompanying photo showed a small ephemeral stream, but no obvious sediment issues. Site V1 scored a 90, with marginal embededdness and bank erosion scores, which are not apparent in the photo. Channel G had an RBP score of 55. The site was ephemeral, so many of the parameters scored zero. Habitat scores this low are generally reserved for ditches and artificial channels. The foregoing are only a few examples of what appear to be artificially low scores.Since the RBP habitat assessment procedure was developed and calibrated for flowing channels, it is not appropriate for ephemeral streams. Therefore, for all ephemeral reaches, and for those intermittent reaches assessed during the dry period with lack of flow, EPA recommends that the applicant remove all water/flow-dependent habitat metrics from the total score (i.e., frequency of riffles, channel flow status, velocity-depth regime) so that the maximum score possible is 140, not 200). Ideally, future performance for re-established ephemeral reaches could be assessed with the non-water dependent habitat metrics; these would include substrate/available cover (e.g., for adult salamanders),

embeddedness, sediment deposition, channel alteration, bank stability, bank vegetation, and riparian zone scores).

- Preservation reaches in Right Fork Line Creek all have extremely elevated conductivity (314 – 1228 µS/cm), and the CMP states that this watershed is "mined-out." While EPA agrees that preservation may be an appropriate component of compensatory mitigation for this project, it is unclear how the proposed preservation in this watershed would satisfy 33 C.F.R. 332.3(h)(1). EPA recommends the applicant seek other preservation opportunities within the watershed where the reaches are in good or excellent physical, chemical and biological condition.
- It is not clear why the applicant refers to their Right Fork Surface Mine on page 23. Please clarify this information.

Adaptive Management Plan (AMP)

Triggers for the Adaptive Management Plan: Mining projects should not cause or contribute to significant degradation of downstream aquatic resources or to violations of narrative or numeric water quality standards. Accordingly, the water quality trigger should ensure that adaptive management actions are taken *before* the biological data indicate the biological condition has degraded. Once the biological data indicate that the biological condition has degraded, the adaptive management plan has failed its preventive function. In addition, there may be lag time between a change in water quality conditions and a response in the biota that would mean that by the time the biological response is detected, degradation has been occurring for some time. Finally, unlike chemical parameters (which generally are sampled twice monthly), biological data is sampled relatively infrequently (once per index season). Therefore, it is not protective to solely use a biological indicator that indicates degradation of the biota or impairment of the aquatic life use as a trigger. If WVSCI is to be used as a trigger, it should be used in conjunction with an indicator parameter, such as conductivity.

1. **Additional Monitoring Sites:** US EPA recommends that the applicant add 5 sites to be used as trigger locations for the AMP. Baseline water quality stations exist at several of these points already. These locations are more appropriate as trigger locations than the originally proposed sites further downstream because they are immediately downstream of the valley fills and are not influenced by any other mining operation or other conditions unrelated to the project. See map at end of document.

    a. ***Peters Fork*** - An additional site should be located on Peters Fork directly downstream of the pond associated with the fill. None of the monitoring locations that are proposed by the applicant to capture impacts of this fill are actually on Peters Fork. The sampling location in Hardway Branch below Peters Fork is not sufficient, as there are mining impacts upstream in Hardway Branch that will make interpretation of Peters Fork results difficult.

b. ***Twomile Branch*** - A site should be added in Twomile Branch to capture the effects of the headwater valley fill. Again, a sampling location in Twentymile Creek is not sufficient due to upstream mining unrelated to this project. Alternatively, the site in Twentymile could be moved up into Twomile Branch.
c. ***UT Little Elk Run (Trash Run)*** - A site should be added on the UT of Little Elk Run in order to isolate impacts from the fill.
d. ***Left Fork Line Creek*** - A site should be added upstream in Left Fork Line Creek closer to the fill.
e. ***Right Fork Line Creek*** - A site should be added upstream in Right Fork Line Creek closer to the fill.

2. **Conductivity or TDS as a Trigger:** As set forth above, EPA suggests using conductivity as a trigger indicator. Our reasoning follows. Conductivity is an instantaneous field measurement that is inexpensive and can be taken regularly (e.g. weekly), or even continuously, and can act as an earlier trigger than the biological monitoring. Biological monitoring is done less frequently and there is likely a lag time between water quality degradation and biological degradation. The best information available to EPA strongly suggests that in this ecoregion elevated levels of conductivity correlate well to impairments in the native biological community. This is because, due to the high gradient of most of the headwater streams, the native biological community in natural conditions has evolved in an environment with low levels of the ions (i.e. salts) that contribute to specific conductance. Invertebrate health depends upon an organism's ability to maintain certain concentrations of ions in their blood and tissues, which they pull from the water via specialized cells on their gills and body surfaces and lose through defecation/urination and diffusion. In addition to potential toxicity from individual ions, elevated ion concentrations (as reflected in elevated levels of conductivity) can create a general osmoregulatory stress on organisms that are adapted to environments with low dissolved solids (i.e., conductivity). Elevated conductivity can have a toxic effect because the ions, regardless of type, can overwhelm the respiratory system and other physiological processes leading to impaired breathing, dehydration, and decreased survival or reproduction. Thus, native Appalachian taxa adapted to naturally dilute streams can be harmed by elevated conductivity for these physiological reasons.
   - **Recommended Conductivity Trigger Levels:** Based on peer-reviewed scientific information documenting the relationship between surface coal mining activities, elevated levels of specific conductance (conductivity), and impacts to water quality and aquatic biology, EPA recommends that the permit include triggers that require the permittee to take action if monitoring data demonstrate concerns commensurate with violations of applicable narrative water quality standards or significant degradation as that term is defined by the Section 404(b)(1) Guidelines. Based on this scientific information, and in the absence of site-specific information documenting the appropriateness of alternative levels, we would recommend a trigger for specific conductivity at 300 µS/cm to activate the adaptive management plan, and a stop work trigger (or other appropriate response) at 500 µS/cm. This recommendation is based upon the information provided to EPA and peer-reviewed studies known to EPA. EPA acknowledges that there may be circumstances in the eco-region in which other conductivity levels could be more appropriate, but based on the information available to EPA we believe these triggers are appropriate for this project. As set forth in more detail

below, the applicant has not provided data sufficient to demonstrate that that their proposed conductivity triggers are appropriate.

For these reasons, EPA believes that the conductivity trigger level proposed by the applicant (1121.6 µS/cm) is not appropriate. A summary of some, but not all, of the peer-reviewed studies considered by EPA is provided below:

Based upon the recently published Office of Research and Development's report, *A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams (Benchmark Conductivity Study)*, we estimate that 35% of native macroinvertebrates (61 genera) expected at regional reference conditions would be extirpated at the conductivity level proposed by the applicant (1121.6 µS/cm). The graphics of WVSCI vs. conductivity provided by the applicant are incomplete because they do not show the full range of conductivity. The lowest conductivity level shown is 500 µS/cm and the highest conductivity level shown is 1500 µS/cm. We offer the following example of a peer reviewed and scientifically defensible analysis of the association between mean WVSCI and binned conductivity levels (taken from the ORD conductivity benchmark report which was subjected to external peer review through the US EPA Science Advisory Board (SAB)). This analysis shows a strong and significant relationship between decreasing WVSCI scores and increasing conductivity.

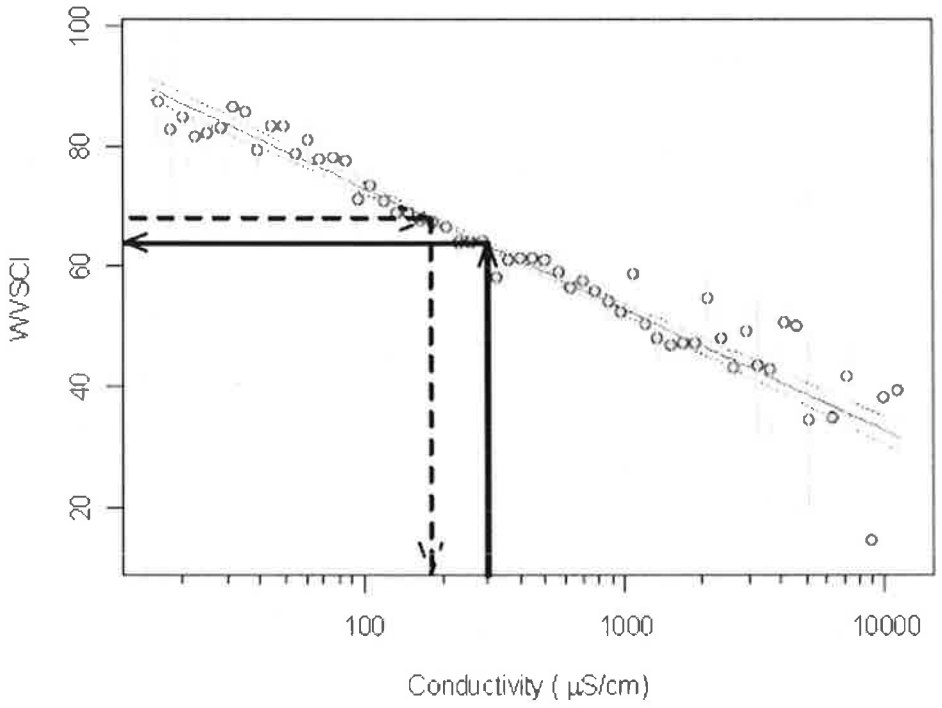

Figure A-9. As conductivity increases, the West Virginia Stream Condition Index (WVSCI) score decreases. Points represent mean WVSCI score for conductivity bins. Bars are 90% confidence intervals. The dotted line is the 95% confidence bound for the modeled line. A WVSCI impairment score of 68 intercepts the regression line at 180 µS/cm (dashed arrow). The model estimates a WVSCI value of 64 at 300 µS/cm (solid arrow).

While the applicant offers several graphics of WVDEP WAB data to support their position that high conductivity levels are not strongly associated with degraded biological conditions, the data provided by the applicant are not analyzed in a way to correctly explore relationships between elevated conductivity and biological condition. The applicant's analysis fails to filter out other common stressors, such as poor physical habitat or acidic conditions. US EPA ORD analyzed the WVDEP data set using WVSCI≥68 as an endpoint, after filtering out physical habitat degradation and acidic pH. For sites in ecoregion 69d, with good habitat (RBP > 140), pH > 6, and conductivity > 500 µS/cm, 71.3% of the sites (92 of 129) had a WVSCI score less than 68. Conversely, those sites with good habitat (RBP > 140), pH > 6, and conductivity < 300 µS/cm, 82.4% (383 of 465) had WVSCI scores ≥ 68. These data indicate that there is a strong association between elevated conductivity and adverse impact to the expected naturally occurring biological community, after filtering out possible effects from two common stressors, even when the family-level index is used as an endpoint.

3. **Trends Analysis as a Trigger:** EPA has significant concerns regarding the applicant's proposal to use a conductivity trend as a trigger for two reasons. First, it is not clear to EPA that the applicant actually intends what it proposes. The applicant proposes to use two standard deviations from the mean as a trigger. However, for example, we calculated

standard deviations around the means of two unimpaired streams in the Twentymile Creek watershed for which we had sufficient conductivity data, Neil Branch and Ash Fork. Neil Branch and Ash Fork both had 17 conductivity readings over a period of several years. Conductivity in Neil Branch ranged from 38 to 45.6 µS/cm with a standard deviation of 2.94, and in Ash Fork conductivity ranged from 33 to 51 µS/cm with a standard deviation of 4.64. In both examples, conductivity would not be allowed to exceed 49 µS/cm for 5 out of 6 samples over a three month period. It is possible that using this methodology, the AMP could be triggered at values far below the action triggers recommended by EPA in each of the streams to be filled (Peters Fork, Twomile Branch, UT Little Elk Creek, and the forks of Line Creek all currently have relatively low conductivity). EPA agrees that this would be protective for these streams, but it is not clear if this is what the applicant intended. Second, the trend analysis is not appropriate because the trigger should reflect the actual conductivity, as it is the concentration of total dissolved solids at any time that impacts the native biota. Therefore, when using or evaluating these triggers to initiate remedial actions to prevent significant degradation, the triggers should be set with a basis in biological impairment (such as the benchmark). Absent additional information, the applicant's proposal would not be protective. The example the applicant uses would allow conductivity to reach 1,769 µS/cm for three months before action is taken. Based on the best information available to EPA, this concentration and duration would be very likely to result in significant degradation to the biological community.

4. **% EPT as a Trigger:** The applicant proposes a method to determine when %EPT has decreased significantly using standard deviations from WVDEP reference site data. EPA is concerned that the % EPT metric proposed by the applicant is not reflective of actual impacts. The % EPT metric can return high % EPT values (indicating no degradation to aquatic life) when many intolerant native EPT genera have in fact been extirpated. For example, this response is often seen in connection with high levels of sewage. Significant degradation is not prevented when the % EPT metric reflects a high proportion of a few tolerant taxa, rather than maintaining the naturally occurring and diverse community composition. (By way of analogy for fish this would be replacing less tolerant native trout with more tolerant carp within the fish assemblage and saying no significant degradation had occurred.) EPA recommends that consideration of degradation of the aquatic ecosystem includes consideration of biodiversity and the natural structure of the community, including the maintenance of native taxa richness at an acceptable taxonomic resolution (genus level).

5. **WVSCI as a Trigger:** As set forth above, if the applicant wishes to use the WVSCI score as a trigger, EPA recommends that it be used in conjunction with a water quality parameter as described above.

    a. *Impairment Threshold:* Alex Energy offers several graphics which indicate WVSCI scores of 60 as an impairment threshold. The original 2000 WVSCI document written by Tetra Tech indicated the 5th% of WVSCI scores for reference sites was 68. US EPA and WVDEP agree the WVSCI score of 68 is the lowest score that indicates full support of the aquatic life use in the 2000 WVSCI document, using the original set of reference sites. Scores below 68 are not considered fully supporting by

WVDEP. We note that the 68 score reflects a less protective approach because it does not reflect additional reference sites identified and sampled since 2000. If all reference sites were included, and the threshold were to be updated, the 5th percentile threshold would be closer to 72.

b. *Frequency of Biological Threshold Failures*: Biological thresholds are often based on a percentile of reference distributions (e.g. the WVSCI threshold of 68 is based on the 5th percentile of 107 reference site WVSCI scores). The threshold should consider the quality of the reference sites and the variability in the reference site scores. For example, states that have high quality reference sites tend to pick lower percentiles (5th or 10th percentile) while states with lower quality reference sites pick higher percentiles (25th percentile).

Usually, a single biological sample at a site is compared to that threshold to assess attainment of the use or significant degradation. In that case, the probability of observing one sample that is below the 5th percentile of the reference distribution solely by chance is 5%. This is called the "acceptable exceedance probability". However, compliance monitoring will often consider more than single samples. Where there are multiple sampling events for a single location, one can calculate the probability of observing exactly k events in n trials by using the binomial distribution (Dr. Lester Yuan, USEPA. pers. comm.):

$$Probability = \frac{n!}{k!\,(n-k)!} p^k (1-p)^{n-k} \qquad \text{Eq. 1}$$

The table below indicates the probability that a sample is below the 5th percentile (e.g. WVSCI) solely by chance, based on the number of samples and number below the 5th percentile. For example, if 2 samples are collected downstream of a mined watershed, the probability that the 2 samples will score less than the 5th percentile solely by chance is only 0.003 or 0.3%. If 3 samples are collected downstream of a mined watershed, the probability that two of those 3 samples will score less than the 5th percentile solely by chance is only 0.007 or 0.7%. Even when 6 samples are collected, the probability that 2 samples will score below the 5th percentile due to chance alone is 0.031 or 3.1%. Since these probabilities are all less than 5% (the acceptable exceedance probability set by the biological threshold), 2 scores below the 5th percentile would be representative of significant biological degradation.

# samples or n	# exceedances or k						
	0	1	2	3	4	5	6
1	0.950	0.050	NA	NA	NA	NA	NA
2	0.903	0.095	0.003	NA	NA	NA	NA
3	0.857	0.135	0.007	0.000	NA	NA	NA
4	0.815	0.171	0.014	0.000	0.000	NA	NA
5	0.774	0.204	0.021	0.001	0.000	0.000	NA
6	0.735	0.232	0.031	0.002	0.000	0.000	0.000

Therefore, we conclude that anytime 2 biological samples score lower than the thresholds in a dataset of 2-6 samples, it is unlikely the two scores below the 5th percentile are due to chance.

There may be instances where low biological scores occur during the early stages of the mining process, and may be caused by temporary physical habitat disturbances such as excessive sedimentation that only occur while sedimentation controls are being built. If these physical habitat disturbances are temporary and water quality has not degraded, the biological scores may recover as the excess sediment flushes from the stream bed. In those instances, if the assessment objective is to evaluate the effect of degraded of water quality on biological condition and function, it may be appropriate to start counting the total number of biological samples and exceedances after the biological scores recover from the initial pulse of sediment. This would require documentation that water quality had not degraded at the same time (conductivity or TDS remained at pre mining levels).

c. *Detecting Significant Degradation from Baseline Using Benthic Indices:* A WVSCI score greater than 68 (the 5th percentile of reference site scores) is considered to reflect attainment of the aquatic life use. Accordingly, EPA recommends that permit conditions should not cause or contribute to conditions that lead to a score below the attainment threshold of 68. Because of potential seasonal variability in index scores, it is important that monitoring takes place as close to the baseline-defined anniversary date as possible. Although the WVSCI index period (April-Oct) is broad, if sampling occurs across multiple seasons (spring, summer), then all subsequent pre-, during-, and post-mining WVSCI scores should be compared *within* each season.

Assessing whether WVSCI scores have significantly degraded below baseline levels can be accomplished by considering the inter-annual variability of WVDEP reference sites. (Dr. Jeroen Gerritsen, Tetra Tech., pers. comm.). This value was derived from 38 statewide reference sites that were revisited annually. Sites were re-visited between 2 and 5 times over a 10 year period (91 total samples). The estimated annual variability was derived by first calculating WVSCI variance found at a particular site with multiple re-visits, then by averaging the pooled variance across all sites and sample years (Mean Square Error) and obtaining the standard deviation based on this variance. The standard deviation was calculated by taking the square root of the average variance (root mean square error) of the set of re-visited sites (n=38). This estimate can be

thought simply as the average within-site variability, which reflects both natural year to year changes in WVSCI scores at each site, as well as variability from field and lab methods and crews. For the WVDEP data, the standard deviation of within-reference site WVSCI scores among years was 5.76 WVSCI units. A further description of the 2 sample test is summarized below:

The null hypothesis for mean WVSCI is: H_0: $\mu_b < \mu_a$,

that is, the index value during or after mining (μ_a) has not degraded from before (μ_b). Since the test only concerns degraded condition, it is one-tailed. For these data, population estimates exist for variability of repeated observations in WV reference streams and we can therefore use single observations of the WVSCI before and after mining commences. The null hypothesis is rejected if:

Eq. 2
$$x_a - x_b > Z_{(1-\alpha)} * s_{ann} \sqrt{\frac{1}{n_a} + \frac{1}{n_b}}$$

where x_a is the "after" index score; x_b is the "before" index score; s_{ann} is the population estimate of inter-annual standard deviation; $Z_{(1-\alpha)}$ is the standard normal Z-score for our value of α (one-tailed), and n_b and n_a are numbers of observations) before and after construction or permitted discharges. For the WVDEP data, the standard deviation of reference site WVSCI scores among years was 5.76, and the one-tailed Z-score at 0.05 significance (α =0.05) is 1.645. By picking an α *value of 0.05, we are saying there is a 5% probability that the score below the 5th percentile is due to chance.*
If the applicant samples only a single time before and after implementation and the WVSCI score after mining degrades more than 13.4 points ($x_a - x_b$ = 1.645 *5.76 *1.4 = 13.4) from the original index score, then we would conclude that the operation significantly degraded the biological index score of the site. Thus, a 13.4 point WVSCI value represents a 95% confidence value that reflects the natural variability within the WVDEP reference data set based on single-sample comparisons. **Accordingly, a departure from the baseline (pre-discharge) WVSCI score of more than 13.4 represents statistically significant departure from the baseline (pre-discharge) condition.**

The foregoing approach prevents a situation in which a high quality water is allowed to degrade all the way to 68, the lowest score that is deemed fully supporting the aquatic life designated use. While the WVSCI score of 68 would still be considered by WVDEP as "fully supporting" the use, a significant decline in the WVSCI score (e.g., from 90 to 75) could still represent significant degradation of the aquatic community under the Section 404(b)(1) Guidelines. The foregoing approach should not be used to allow a stream with a WVSCI score between 68 and 81.4 to decline below a WVSCI score of 68 because a WVSCI score of 68 represents the minimal use attainment score.